
New Species of *Hedyosmum* (Chloranthaceae) from Northern South America

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ABSTRACT. Four new species of *Hedyosmum*, all belonging to subgenus *Tafalla* sect. *Microcarpa*, are herein proposed. *Hedyosmum uniflorum* occurs in mid-elevation montane regions in central Ecuador and differs from its closest relative, *H. bonplandianum*, by its basally rounded, sometimes oblique leaves, flocculose midveins, slightly fimbriate stipular appendages, and long, linear, dissected stigmas. *Hedyosmum narinoense*, which inhabits the western slopes of the western cordillera in southern Colombia, also has single-flowered cymules but is unique among the solitary-flowered cymule species by having shorter pistillate inflorescences and scabrous, scurfy leaf sheaths. The remaining two new species, *H. tepuiense* and *H. intermedium*, are found in the Venezuelan Guayana. *Hedyosmum tepuiense* is recognized as distinct from the broadly ranging *H. racemosum* by virtue of its long stipular appendages, verrucose leaf sheaths, floccose midveins, and longer inflorescences. Morphologically intermediate between *H. gentryi* and *H. neblinae*, *Hedyosmum intermedium* is distinguished by its glabrous, elliptic leaves and 2–3-flowered purple-fruited cymules.

Recent collections from South America have clarified the status of several populations of *Hedyosmum* that were previously incorporated into the variation of broadly ranging species (Todzia, 1988). All of these newly described species fall into subgenus *Tafalla* sect. *Microcarpa*, the largest section in *Hedyosmum*, now with 28 species. This section is recognized by racemose or paniculate pistillate inflorescences, cymules of 1–8 flowers, fleshy floral bracts that are fused in fruit, and white, rarely purple, fruiting cymules.

Hedyosmum uniflorum Todzia, sp. nov. TYPE: Ecuador. Pichincha: old road Quito–Santo Domingo, 12–15 km NE of old road from junction with new road near Alluriquin, 1,430–1,540 m, ca. 0°20'S, 78°55'W, 3 Feb. 1982, *Luteyn, Pipoly, Lebrón-Luteyn & Kallunki* 8754 (holotype, TEX; isotypes, NY, QCA not seen). Figure 1.

Hedyosmo bonplandiano foliis laevibus et cymulis flore singulo instructis similis sed differt appendicibus fimbriatis stipularum, foliis ad basim rotundatis aliquando obliquisque trichomatibus floccosis in nervi centrali paginis inferis, et stigmatibus longis linearibusque.

Dioecious (?), aromatic trees or shrubs 4–8 m tall; young stems quadrate; older stems terete, with tubular leaf bases persisting, ultimately disintegrating and leaving circular scars; internodes 3–8 cm long. Leaves elliptic, 7.5–15.5 cm long, 3–6.5 cm broad, with long-acuminate tips 0.5–1 cm long, rounded, often oblique at base, at margins sharply serrate with teeth 3–4 mm distant, drying subcoriaceous, smooth to slightly scabrous; midveins impressed above, raised beneath, with sparse floccose multibranching trichomes; larger lateral veins 6–9, 0.6–1.8 cm distant, arcuate, raised beneath, glabrous or occasionally with sparse strigose to flocculose hairs; free portion of petioles 0.6–1.4 cm long, glabrous except for occasional flocculose hairs running down midrib onto petiole; petiolar sheaths 1.3–1.8 cm long, 0.5–1 cm broad at apex, inflated, slightly flared at apex, with two strigose lines extending down from the free portion of petioles, persistent but disintegrating with age, each distal margin with two slightly fimbriate, stipular appendages 1–2 mm long, extending above free portion of petioles ca. 0.5 mm. Staminate inflorescences not seen. Pistillate inflorescences axillary or terminal, racemes or sparsely branched panicles, 3.5–8 cm long with 16–46 cymules; subtending bracts similar in size and shape to the leaves or more frequently smaller; cymules 1(–3)-flowered, alternately or oppositely arranged on the rachis, 3–10 mm distant, sessile or on short peduncles 1–3 mm long; subtending floral bracts enclosing one-fourth to three-quarters of flower, with acuminate tips 0.5–1 mm long, margin entire or with occasional strigose hairs. Pistillate flowers slightly trigonous, ca. 3 mm long, ca. 2 mm broad, with or without a small pore on each face of the ovary; perianth lobes small, deltoid; stigmas usually highly dissected, linear, 2–3 mm long, papillose. Fruiting cymules green (?).

Distribution, habitat, and phenology. Known

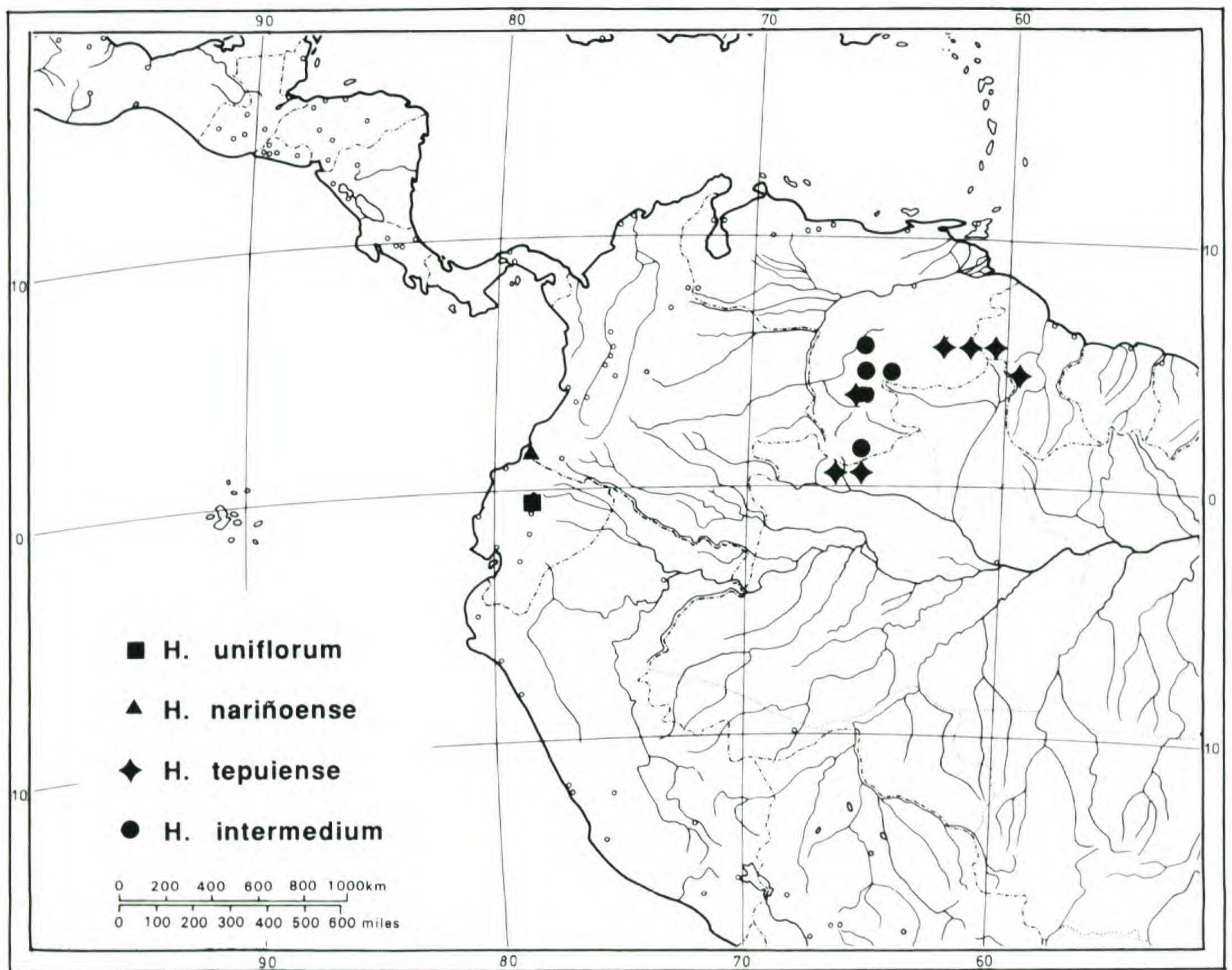


Figure 1. Distribution of the new species of *Hedyosmum*. Each symbol represents the presence of that respective species in a degree square.

only from central Ecuador (Prov. Pichincha) on the western slopes of the western cordillera, where it occurs between 1,300 and 2,200 m in disturbed cloud forest and montane wet forest. Flowering specimens have been collected in February, July, September, and December.

Hedyosmum uniflorum appears to be most closely allied to *H. bonplandianum* and *H. racemosum*. This new species is similar to *H. bonplandianum* in having usually single-flowered cymules and leaves smooth upon drying. It differs from *H. bonplandianum* in having long, linear stigmas (vs. stigmas shorter and more clavate), leaves rounded and sometimes oblique at base (vs. attenuate), flocculose hairs on midvein beneath (vs. entirely glabrous), and stipular appendages slightly fimbriate (vs. usually linear). If its fruiting cymules are green at maturity as indicated by label data, this would also be a character at variance with *H. bonplandianum*. Fruiting cymules of all previously known species of subgenus *Tafalla* sect. *Microcarpa* are either white or purple. The southernmost populations of *H. bonplandianum* occur in southern Colombia (Depto. Cauca).

Although this population was originally placed into *H. racemosum*, it was noted that its solitary-flowered cymules and long (up to 3 mm), highly dissected stigmas were anomalous within the *H. racemosum* species concept (Todzia, 1988: 75). Morphological characters shared with *H. racemosum* include slightly fimbriate stipular appendages and leaves smooth upon drying. As noted above, *H. uniflorum* differs from *H. racemosum* in having usually single-flowered cymules, highly dissected stigmas, as well as rounded often oblique leaf bases (vs. attenuate and not oblique) and fruiting cymules green not white.

Paratypes. ECUADOR. PICHINCHA: Carretera Quito–Aloag–Santo Domingo de los Colorados, km 94, a 10 km al S de la carretera, estribaciones occidentales del Volcán Corazón, 0°21'30"S, 78°51'15"W, 1,300–1,500 m, 24 Dec. 1986, *Zak 1492* (MO, TEX); Reserva Florística-Ecológica "Río Gualjalito," km 59 de la carretera antigua Quito–Santo Domingo de los Colorados, estribaciones occidentales del Volcán Pichincha, 78°48'10"W, 0°13'53"S, 1,800–2,200 m, 9 July 1985, *Jaramillo & Zak 7735* (MO, TEX); Reserva Florística-Ecológica "Río Gualjalito," km 59, carretera antigua Quito–Santo Domingo,

faldas al oeste del Volcán Pichincha, 0°13'S, 78°48'W, 1,800–2,200 m, 24 Sep. 1988, *Zak & Jaramillo 3827* (TEX).

Hedyosmum narinoense Todzia, sp. nov. TYPE: Colombia. Nariño: 2–8 km E of Junín on Tumaco–Túquerres road, 1°15'N, 78°09'W, ca. 1,100 m, 26 July 1986, *Gentry et al. 55235* (holotype, MO; isotype, TEX—2 sheets). Figure 1.

Hedyosmo bonplandiano ac *H. unifloro* cymulis flore singulo instructis similis sed ab utroque differt inflorescentiis pistillatis brevioribus et vaginis foliorum furfuraceis scabris aetate provectis laciniatisque.

Dioecious (?) trees ca. 8 m tall; young stems quadrate, scurfy; older stems terete, becoming glabrous, with tubular leaf sheaths persisting and ultimately leaving circular scars; internodes 2.5–6 cm long. Leaves narrowly elliptic to elliptic, 8.5–12 cm long, 2.5–5 cm broad, with acuminate tips 0.5–1 cm long, rounded to attenuate at base, at margins sharply serrate with teeth 2.5–5 mm distant, drying coriaceous, smooth above, scabrous beneath; midveins impressed above, raised beneath, with sparse, floccose, multibranched trichomes; larger lateral veins 6–7, 11–20 mm distant, arcuate, raised and glabrous beneath; free portion of petioles 0.8–1.1 cm long, scabrous, rough; petiolar sheaths 1.6–2 cm long, 0.7–1.3 cm broad at apex, slightly inflated to somewhat closely appressed to stem, scurfy, becoming lacinate at upper margin with age, with slightly raised longitudinal lines extending down from distal margin, stipular appendages absent or early caducous. Staminate inflorescences not seen. Pistillate inflorescences axillary or terminal, racemes or sparsely branched panicles, 2.5–5.8 cm long with ca. 50 flowers, alternately arranged 1–8 mm distant on the rachis, subsessile or on short pedicles 1–3 mm long; lower inflorescence bracts similar to leaves but much smaller. Flowers usually solitary on rachis, rarely aggregated into clusters of 2, subtended by a fleshy cupular bract, on one side with an acuminate free tip ca. 1 mm long, enclosing lower half of flower. Pistillate flowers slightly trigonous, ca. 2 mm long, ca. 1 mm broad; perianth lobes united at base; stigmas clavate, dissected distally, ca. 2 mm long. Fruits white, ellipsoidal, 3–4 mm long, ca. 3 mm broad.

Distribution, habitat, and phenology. Known only from southern Colombia (Prov. Nariño) on the western slopes of the western cordillera where it occurs in pluvial forests and disturbed roadsides along cloud forest at elevations between 900 and 1,000 m. The three known collections were collected in flower and fruit in July.

Hedyosmum narinoense appears to share distinctive characters with several other species of *Hedyosmum*. It has the solitary flowers of *H. bonplandianum*, which ranges from Nicaragua to Colombia, and *H. uniflorum* of central Ecuador, yet differs from both by its shorter pistillate inflorescences, and scabrous and scurfy leaf sheaths that become lacinate with age. These lacinate leaf sheaths, along with its scabrous leaves, show a possible relationship to *H. scaberrimum*, which also occurs in southern Colombia. It differs from the latter species by its flowers, which are solitary on the inflorescence rachis (vs. in cymes of 2–4 flowers). Thus it is on the following suite of characters that the above collections are described as new: flowers borne singly on the inflorescence axis, not clustered into cymes; scabrous leaves with sparsely dentate teeth 2.5–5 mm distant; and scurfy, scabrous leaf sheaths becoming lacinate along the distal margin.

Paratypes. COLOMBIA. NARIÑO: Junín–Barbacoas road, 2–10 km N of Junín, 1°30'N, 78°10'W, 900–1,000 m, 26 July 1986, *Gentry et al. 55329* (MO, TEX).

Hedyosmum tepuiense Todzia, sp. nov. TYPE: Venezuela. Amazonas: Depto. Río Negro, Cerro de la Neblina, Expedition Camp VII, 0°50'N, 65°58'W, 1,850 m, 29 Nov. 1984, *Anderson 13389* (holotype, TEX; isotypes, MICH not seen, NY not seen, VEN not seen). Figure 1.

Hedyosmo racemoso inflorescentibus racemosis paniculatisque cymulis floribus aliquot instructis similis sed differt appendicibus stipularum maxime longis et vaginis foliorum verrucosis.

Dioecious, aromatic trees or shrubs 4–10 m tall; young stems quadrate; older stems terete with tubular leaf bases persisting, ultimately disintegrating and leaving circular scars; internodes 3–6 cm long. Leaves elliptic, 7.5–19 cm long, 2.3–10 cm broad, with long-acuminate tips 0.5–1.5 cm long, attenuate at base, at margins coarsely serrate with teeth 3–6 mm distant, drying subcoriaceous, scabrous; midveins impressed above, raised beneath, with floccose or strigose hairs; free portion of petioles 0.7–2 cm long, glabrous; petiolar sheaths 1.5–2.5 cm long, 1–1.4 cm broad at the apex, inflated, slightly flared at apex, smooth to verrucose especially along distal margin, extending above free portion of petioles ca. 0.5 mm, persistent but disintegrating with age, each distal margin with two linear to slightly fimbriate stipular appendages ca. 3 mm long. Staminate inflorescences composed of a straight rachis 2.5–6.5 cm long, with 2–3 nodes; nodes usually alternate, sometimes opposite, with 1 spike per node; spikes

sessile or on short peduncles 1–4 mm long; mature spikes 0.6–1.5 cm long, ca. 4 mm broad; stamens 50–100; anthers 1–1.5 mm long, connectives extended into a pad ca. 0.5 mm long with an apicule at summit. Pistillate inflorescences axillary or terminal, racemes or sparsely branched panicles, 3–10 cm long with ca. 20 cymules; cymules sessile or on short peduncles 1–5 mm long, oppositely or alternately arranged on rachis, 0.2–1.4 cm distant, very irregularly globose, 4–6 mm diam., subtending floral bracts connate in lower one- to two-thirds, enclosing one- to three-fourths of flower, the margin usually entire, occasionally with a few sparse strigose hairs. Pistillate flowers slightly trigonous, 2–3 mm long, 1–2 mm broad, with a small pore on each face of the ovary; perianth lobes small, ca. 0.3 mm long, rounded at apex; stigmas irregularly clavate, 1–2 mm long, 3-angled, papillose. Fruiting cymules white, irregularly globose, 4–9 mm diam. Seeds ca. 3 mm long, ellipsoidal, brown, smooth.

Distribution, habitat, and phenology. Occurs throughout a large region of the Venezuelan Guayana at elevations of 1,200–2,660 m in wet forest and riparian habitats. Flowering specimens have been collected in February, April, and November and fruiting specimens in March, October, November, and December.

The sandstone plateaus or tepuis of the Venezuelan Guayana are not a region of great *Hedyosmum* diversity as they are for some other groups of plants (Steyermark, 1979). Three species were previously reported from that area: *H. racemosum* (Ruiz & Pavón) G. Don, *H. gentryi* D'Arcy & Liesner, and *H. neblinae* Todzia (Todzia, 1988). This new species, *H. tepuiense*, was previously treated as *H. racemosum* in Todzia (1988). Another new species described below, *H. intermedium*, was previously treated as the southernmost populations of *H. gentryi*. Considering these taxonomic reevaluations, the three species found in the Venezuelan Guayana are now called *H. tepuiense*, *H. intermedium*, and *H. neblinae*.

Hedyosmum tepuiense is obviously closely allied to *Hedyosmum racemosum*, with both having racemose and paniculate inflorescences with several-flowered cymules. This new species differs from *H. racemosum* by its extremely long stipular appendages (4 mm long vs. 1–2 mm long for *H. racemosum*) and verrucose leaf sheaths (vs. glabrous in *H. racemosum*). *Hedyosmum tepuiense* has consistently larger leaves than populations of *H. racemosum* in the Andes, as well as floccose trichomes on the lower side of the midvein and longer inflorescences.

Paratypes. GUYANA. Upper Potaro River region, upper slopes of Mt. Wokomung, 05°05'N, 59°50'W, ca. 1,500 m, 4 July 1989, *Boom & Samuels 9063* (NY, TEX), 1,530 m, 13 July 1989, *Boom & Samuels 9200* (NY, TEX). VENEZUELA. AMAZONAS: Depto. Río Negro, Cerro de la Neblina, Expedition Camp VII, 00°50'N, 65°58'W, 1,850 m, 29 Nov. 1984, *Anderson 13410* (TEX), 1 Dec. 1984, *Anderson 13440* (TEX); Cerro Neblina, camp #7, S slopes of Cañon Grande, 1,800 m, along river below camp, 0°55'N, 66°0'W, 29 Nov. 1984, *Croat 59449* (MO, TEX), *Croat 59463* (MO, TEX); trail S from Cerro Neblina Camp #5, 1,200–1,300 m, 0°49'N, 66°0'W, 12 Apr. 1984, *Gentry & Stein 46570* (TEX); Depto. Río Negro, E of and below Neblina Camp 7, 0°55'N, 66°0'W, S slopes Canyon Grande, ca. 1,700 m, 29 Nov. 1984, *Kral 71905* (TEX); Depto. Atabapo, Cerro Marahuaca, summit SW side of center, sides and bottom of 120 m deep sinkhole, 3°39'N, 65°26'W, 2,600 m, 22 Oct. 1988, *Liesner et al. 25171* (TEX); Depto. Río Negro, Cerro de La Neblina, ridge at divide between Brazil and Venezuela, 26 km ENE of Neblina Base Camp, approx. 0°53'N, 65°56'W, 2,000 m, 15 Apr. 1984, *Plowman & Thomas 13629* (NY, TEX); Depto. Río Negro, Camp 7, 00°52'N, 65°58'W, 1,730–1,850 m, 1 Feb. 1985, *Renner 2058* (US). BOLIVAR: Cerro Apacará, Río Caroní, 1,850 m, 11 Nov. 1946, *Cardona 1956* (NY, US); Cerro Roraima, ca. 5°12'N, 60°40'W, 2,280–2,600 m, *Luteyn & Aymard 9769* (TEX); Ilú-tepui, Gran Sabana, 7–8,000 ft., 17 Mar. 1952, *Maguire 33470* (TEX); Mount Roraima, SW slopes, 2,400 m, 10 Jan. 1939, *Pinkus 130* (BR, F, G, GH, MO, NY, S, US); Cerro Uananapán, S of Uei-tepui, between Luepa and Cerro Venamo, 1,450 m, 25 Apr. 1960, *Steyermark & Nilsson 746* (NY, VEN); Chimantá Massif, SW edge of Apácara-tepui, 1,800–2,000 m, 14 Apr. 1953, *Steyermark 74972* (F, NY); Auyán-tepui, entre la escarpa superior, este del paso de acceso a la cumbre del sur y "El Peñón," 1,800 m, 17 May 1964, *Steyermark 94083* (NY, VEN); Massif Chimantá, along Río Asaporko, 1,300 m, 7 Jan. 1953, *Wurdack 34033A* (NY, US).

***Hedyosmum intermedium* Todzia, sp. nov.**

TYPE: Venezuela. Amazonas: Depto. Atures, Sierra Maigualida, NW sector, small valley along an upper tributary of Caño Iguana, 5°30'N, 65°15'W, 2,000 m, 28 Feb.–3 Mar. 1991, *Berry, Huber & Rosales 4913* (holotype, TEX; isotypes, MO, MYF not seen, VEN not seen). Figure 1.

Inter *Hedyosmum neblinae* ac *H. gentryi* intermedium; *H. neblinae* similis dispositionibus florum ac cymularum sed foliis ellipticis et vaginis foliorum glabris differt; *H. gentryi* similis foliis ellipticis ac vaginis foliorum glabris sed cymulis floribus 2–3 instructis differt.

Dioecious, aromatic trees or shrubs 1.5–8 m tall; young stems quadrate, sometimes dull red; older stems terete with tubular leaf bases persisting, ultimately disintegrating and leaving circular scars; internodes 1–7 cm long. Leaves elliptic, 6–14 cm long, 2.3–6.4 cm wide with abruptly acuminate apices 0.5–1.2 cm long, attenuate at base, at margins coarsely serrate with teeth 5–8 mm distant,

glabrous, drying subcoriaceous and smooth; midvein glabrous beneath; larger lateral veins 10–14, 7–10 mm distant, obscure, leaving midvein at ca. 90° angle, arcuate toward margin, free portion of petioles 0.4–1.8 cm long, glabrous; petiolar sheaths 0.8–1.1 cm long, 0.6–0.9 cm broad at apex, slightly flared at apex, glabrous, smooth; stipular appendages linear, ca. 2 mm long, caducous. Staminate inflorescences 5.5–11 cm long, composed of rachises with 1–4 nodes with 1–3 spikes per node; mature spikes 1–2 cm long, subtended by 2–4 ovate bracts; stamens ca. 130–200, congested on axis, ca. 1.5 mm long, ca. 1 mm broad at apex, connective ca. 0.3 mm long, flattened distally. Pistillate inflorescences axillary or terminal, simple or basally branched racemes 3–4 cm long; cymules with 2–3 flowers, opposite on inflorescence axis, 4–10 mm distant, sessile; subtending floral bracts 2.5–4 mm long, free almost to base or connate in lower one-fourth, acute at apex, margin ciliate. Pistillate flowers strongly trigonous, 3–4 mm long, 1–2 mm broad on each face, with a large pore on each face of the ovary; perianth lobes minute, deltoid, rounded at apex. Fruiting cymules red to purple; seeds ca. 4 mm long, strongly trigonous, minutely papillose.

Distribution, habitat, and phenology. Widespread in the Venezuelan Guayana, occurring in semi-open and medium-height forest, savannas, and stream and river edges between 1,200 and 2,000 m. Flowering specimens have been collected in February, March, and October, while fruiting is reported in March and October.

Numerous recent expeditions in the Venezuelan Guayana have provided sufficient material to assess these populations that were originally placed in *Hedyosmum gentryi* (Todzia, 1988). Along with *H. gentryi*, *H. neblinae*, and *H. pseudoandromeda*, *H. intermedium* is one of the few purple-fruited species in subgenus *Tafalla* sect. *Microcarpa*. *Hedyosmum intermedium* is morphologically intermediate between *Hedyosmum gentryi*, which ranges from eastern Panama (Darién) and northern Colombia (Antioquia) to northern Venezuela (Aragua, Falcón, Mérida, Miranda, Monagas, Portu-

guesa, and Yaracuy), and *H. neblinae* (known only from Cerro Neblina, which is further south than the localities presently known for *H. intermedium*). *Hedyosmum intermedium* has a flower and cymule arrangement similar to *H. neblinae*, but differs from it by glabrous (vs. verrucose) leaf sheaths and elliptic (vs. ovate) leaves. It shares with *H. gentryi* elliptic leaves and glabrous leaf sheaths, but differs in having 2–3 flowers per cymule (vs. 1 flower per cymule).

Paratypes. VENEZUELA. AMAZONAS: Serranía Parú, Caño Asisa, Río Ventuari, 2,000 m, 7 Feb. 1951, Cowan & Wurdack 31336 (NY); Depto. Atabapo, slope of Cerro Marahuaca, Río Yameduaka arriba, 3°38'N, 65°28'W, 1,225 m, 19 Feb. 1985, Liesner 17665A (MO, TEX, VEN); Depto. Atabapo, below Salto Los Monos on tributary of headwaters of Río Iguapo, 3°35'N, 65°23'W, 1,500–1,650 m, 12 Mar. 1985, Liesner 18582 (MO, TEX, VEN); Depto. Río Negro, Cerro Aracamuni, summit, Proa camp, 1°32'N 65°49'W, 1,400 m, 27 Oct. 1987, Liesner & Carnevali 22517 (MO, TEX, VEN), Liesner & Carnevali 22535 (MO, TEX, VEN); Depto. Atabapo, Cerro Marahuaca, slopes, "Sima" area, 03°43'N 65°30'W, 1,200 m, 16 Oct. 1988, Liesner 24961 (MO, TEX, VEN), 18 Oct. 1988, Liesner 25068 (MO, TEX, VEN); Depto. Río Negro, Cerro Aracamuni, summit, Proa camp, 1°32'N 65°49'W, 1,400 m, 25 Oct. 1987, Liesner & Carnevali 22438 (MO, TEX, VEN), 26 Oct. 1987, Liesner & Carnevali 22472 (MO, TEX, VEN). BOLIVAR: Meseta del Jaua, Cerro Jaua, 1,820–1,880 m, 28 Feb.–5 Mar. 1974, Steyermark et al. 109677 (A, K, NY); Distr. Cedeño, Meseta de Jaua, sector centro meridional, cabeceras del Río Marajano, afluente del Río Cácaro, 04°48'N, 64°32'W, 1,750–1,800 m, 20 Nov. 1989, Huber 13048 (TEX).

Acknowledgments. I thank the curators at MO, NY, US, and VEN for sending *Hedyosmum* material for identification. I also thank Guy Nesom for the Latin diagnoses and Paul Berry for review of the manuscript.

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